

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

AOKI et al.

Art Unit: Unknown

Application No.: Unassigned

Examiner: Unassigned

Filed: December 5, 2000

For: LIQUID CRYSTAL  
DISPLAY APPARATUS  
AND TFT PANEL

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Prior to the examination of the above-identified patent application, please  
enter the following amendments and consider the following remarks.

**IN THE SPECIFICATION:**

Page 1, line 14, change "between" to --of--;

line 24, delete "a";

line 29, delete "a".

Page 2, line 1, change "of which" to --with a--;

change "is" (first and second occurrences) to --of--;

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change "the" to --a--;

line 6, change "the" to --a frequency--;

line 7, after " $\mu\text{m}$ " insert --,--;

line 8, delete "the" (first occurrence);

line 11, delete "the" (first and third occurrences);

line 12, delete "the" (first occurrence);

line 13, delete "formed";

line 14, change "integrally" to --integral--;

delete "the" (third occurrence);

line 15, delete "a";

line 19, delete "coarse";

after "crystals" insert --large--;

line 20, delete "a density";

after "that" insert --it--;

line 21, change "to" (first occurrence) to --into--;

delete "to" (second occurrence);

line 29, change "goes out to the" to --falls below a--;

change "side or higher side" to --limit or an upper

limit--;

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line 30, change "the" (second occurrence) to --a--;

line 31, change "coarse" to --large--;

change "the" to --an--;

line 32, change "the" (second occurrence) to --an--;

line 33, change "the" (second occurrence) to --a--.

Page 3, line 2, change "coarse" to --large--;

line 7, change "of " to --in--;

line 13, delete "be";

line 19, change "conducted" to --connected--.

Page 4, line 13, change "type transistor" to --channel--;

lines 13-14 change "type transistor" (second occurrence) to

--channel transistors--;

lines 14-15, change "n type transistor and the p type transistor" to

--transistors--;

line 18, change "unparallel" to -- non-parallel--;

line 20, change "unparallelism" to --non-parallelism--;

line 30, change "of which" to --with a--;

delete "is";

line 32, change "be passed through" to --pass--;

after "without" insert --being--.

Page 5, line 1, after "pass" insert --only--;

line 2, delete "only";

line 7, after "direction" insert --,--;

line 9, delete "to the";

line 11, delete "arranged";

line 18, after "transistors" insert --,--;

line 19, after "section" insert --,--;

line 20, after "attains" insert --a--;

line 21, change "become" to --becomes--.

Page 12, line 13, change "taking" to --taken--;

line 19, change "to" to --into--;

line 22, change "to" to --in--;

line 29, change "to" to --in--;

line 31, after "forming" insert --an--;

line 33, change "to" to --in--.

Page 13, line 7, change "where" to --in which--.

IN THE CLAIMS:

1. (Amended) A liquid crystal display apparatus including a liquid crystal display, a thin film transistor (TFT) panel driving the liquid crystal display, and an opposing substrate, said TFT panel having a display area including a plurality of signal lines and a plurality of scanning lines [arranged intersecting with] crossing each other [and], a plurality of pixel transistors arranged [at the intersecting portions] where said signal lines and said scanning lines cross, and a driving circuit area including a plurality of driving transistors, wherein

a gate interconnection for said driving transistors [formed] in said driving circuit area is arranged along a folded line including a first line linearly extending along a first direction, a second line linearly extending along a second direction different from said first direction, and a bent portion connecting said first and second lines; and [wherein]

said driving transistors are arranged along said first and second lines, such that channel regions of said transistors do not overlap said bent portion when viewed two-dimensionally.

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2. (Amended) The liquid crystal display apparatus according to claim 1, wherein a direction from an end point closer to the display area to an end point farther from the display area of each of the lines [are] is reversed in the first and second lines, when viewed from the side of said display area.

3. (Amended) The liquid crystal display apparatus according to claim 1, wherein each of said first and second lines [consists of] includes a smaller folded line.

4. (Amended) The liquid crystal display apparatus according to claim 1, wherein said bent portion includes a line connecting said first and second lines and intersecting, almost orthogonally [with], a boundary between said display area and said driving circuit area.

5. (Amended) The liquid crystal display apparatus according to claim 1, wherein said bent portion includes a portion where said first and second lines are connected directly, [with] at an angle.

6. (Amended) The liquid crystal display apparatus according to claim 1, wherein [direction of] a width of the channel region of said driving transistors is [arranged to be] parallel to said first and second lines.

7. (Amended) The liquid crystal display apparatus according to claim 1, wherein said display area is rectangular, and said driving circuit area [is arranged] does not [to] extend beyond a space between lines [extended] extending from two opposing [two] parallel sides of said [rectangular] display area.

8. (Amended) The liquid crystal display apparatus according to claim 1, wherein a distance between [one] a first of said driving transistors and [another] a second of said driving transistors, neighboring and positioned nearest to said [one] first driving transistor, viewed from [the side of] said display area, is longer than an interval of pitch stripes that are traces of scanning of laser beam irradiation.

9. (Amended) The liquid crystal display apparatus according to claim 1, wherein, in the channel region of each of said driving transistors, a distance

between a corner of the channel region nearest to said display area and a corner of the channel region farthest from said display area, viewed from [the side of] said display area, is longer than an interval of pitch stripes that are traces of scanning of laser beam irradiation.

10. (Amended) A thin film transistor panel for driving a liquid crystal, having a display area including a plurality of signal lines and a plurality of scanning lines [arranged intersecting with] crossing each other and a plurality of pixel transistors arranged [at the intersecting portions] where said signal lines and said scanning lines cross, wherein

a gate interconnection for said driving transistors [formed] in said driving circuit area is arranged along a folded line including a first line linearly extending along a first direction, a second line linearly extending along a second direction different from said first direction, and a bent portion connecting said first and second lines; and [wherein]

said driving transistors are arranged along said first and second lines, such that channel regions of said transistors do not overlap said bent portion when viewed two-dimensionally.



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IN THE ABSTRACT:

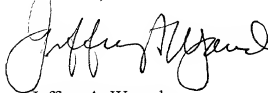
Please replace the existing Abstract of the Disclosure with the appended  
Abstract of the Disclosure.

**REMARKS**

The foregoing Amendment improves the form of the application without  
adding new matter.

Respectfully submitted,

LEYDIG, VOIT & MAYER



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## ABSTRACT OF THE DISCLOSURE

A liquid crystal display apparatus in which an arrangement possibly susceptible to degradation in display quality by a miss shot of a laser used for turning amorphous silicon into polycrystalline silicon is avoided and a narrow peripheral frame can be attained. A gate interconnection for transistors in a driving circuit area is arranged along a folded line having two lines extending in two different directions and a bent portion. Channel regions of the transistors are arranged along the two lines, such that the channel regions do not overlap the bent portion.

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